

WHAT IS CLAIMED IS:

1. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

5 applying pulses to said signal line at intervals during one frame, wherein said intervals are determined in accordance with a desired tone of the pixel associated with said signal line,

wherein said switching element comprises:

10 a crystalline semiconductor film comprising silicon over a substrate having an insulating surface, and

at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween.

2. A method according to claims 1, wherein said electro-optical device is a liquid crystal display device.

15 3. A method according to claim 2, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

20 4. A method according to claims 1, wherein said switching element is a thin film transistor.

5. A method according to claim 4, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

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6. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

5 applying pulses to said signal line at intervals during one frame, wherein the interval between the i -th pulse and $(i+1)$ -th pulse is $2^{i-1} T_1$, where i is a natural number and T_1 is a constant period,

wherein said switching element comprises:

10 a crystalline semiconductor film comprising silicon over a substrate having an insulating surface, and at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween.

7. A method according to claims 6, wherein said electro-optical device is a liquid crystal display device.

15 8. A method according to claim 7, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

9. A method according to claims 6, wherein said switching element is a thin film transistor.

20 10. A method according to claim 9, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

11. A method according to claims 6, wherein said T_1 is less than 100μ sec.

12. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

5 applying pulses to said signal line at intervals during one frame, wherein said intervals are arranged so that the interval between the i -th pulse and $(i+1)$ -th pulse is $2^{n-1} T_1$, where n is a voluntary natural number, i is a natural number, and T_1 is a constant period,

wherein said switching element comprises:

10 a crystalline semiconductor film comprising silicon over a substrate having an insulating surface, and

at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween.

13. A method according to claims 12, wherein said electro-optical device is a liquid crystal display device.

14. A method according to claim 13, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

15. A method according to claims 12, wherein said switching element is a thin film transistor.

16. A method according to claim 15, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

17. A method according to claim 12, wherein said T_1 is less than 100μ sec.

18. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

5 applying pulses to said signal line at intervals during one frame, wherein said intervals are determined in accordance with a desired tone of the pixel associated with said signal line,

wherein said switching element comprises:

a crystalline semiconductor film comprising silicon over a substrate having a insulating surface;

10 at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween, and

a leveling film comprising organic resin to provide an upper surface over said switching element.

15 19. A method according to claims 18, wherein said electro-optical device is a liquid crystal display device.

20. A method according to claim 19, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

20 21. A method according to claims 18, wherein said switching element is a thin film transistor.

22. A method according to claim 21, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

23. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

applying pulses to said signal line at intervals during one frame,

wherein said intervals are arranged so that the interval between the i -th pulse and $(i+1)$ -th pulse is $2^{i-1}T_1$, where i is a natural number and T_1 is a constant period,

wherein said switching element comprises:

a crystalline semiconductor film comprising silicon over a substrate having a insulating surface;

at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween, said gate electrode electrically connected to said signal line, and

a leveling film comprising organic resin to provide an upper surface over said switching element.

24. A method according to claims 23, wherein said electro-optical device is a liquid crystal display device.

25. A method according to claim 24, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

26. A method according to claims 23, wherein said switching element is a thin film transistor.

27. A method according to claim 26, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

28. A method according to claims 23, wherein said T_1 , is less than 100μ sec.

29. A method for driving an electro-optical device having a plurality of pixels, each of which includes a signal line and at least one switching element, said method comprising the step of:

applying pulses to said signal line at intervals during one frame, wherein said intervals are arranged so that the interval between the i -th pulse and $(i+1)$ -th pulse is $2^{n-1} T_1$, where n is a voluntary natural number, i is a natural number, and T_1 , is a constant period,

wherein said switching element comprises:

a crystalline semiconductor film comprising silicon over a substrate having a insulating surface;

at least one gate electrode adjacent to said crystalline semiconductor film with a gate insulating film interposed therebetween, said gate electrode electrically connected to said signal line, and

a leveling film comprising organic resin to provide an upper surface over said thin film transistor.

30. A method according to claims 29, wherein said electro-optical device is a liquid crystal display device.

31. A method according to claim 30, wherein said liquid crystal display device comprises a liquid crystal material selected from the group consisting of twisted nematic liquid crystal, super twisted nematic, ferroelectric liquid crystal, antiferroelectric liquid crystal, dispersion liquid crystal, and polymer liquid crystal.

32. A method according to claims 29, wherein said switching element is a thin film transistor.

33. A method according to claim 32, wherein said thin film transistor is an n-channel type thin film transistor or a p-channel type thin film transistor.

34. A method according to claims 29, wherein said T_1 is less than $100/\mu$ sec.

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